

WHAT IS CLAIMED IS:

1. A protective film transfer sheet comprising a peelable support and a protective film formed on the support, wherein the protective film comprises a protective layer and an adhesive layer formed on the support in this order and the adhesive layer has pressure-sensitive adhesiveness, the adhesiveness of the adhesive layer being increased by heat imparted after transferred on the image surface of photo masks, and is curable by exposure to ionizing radiation.
2. The protective film transfer sheet for photo masks of claim 1, wherein the adhesive layer contains an ionizing radiation curable resin and a heat-reactive resin.
3. The protective film transfer sheet for photo masks of claim 2, wherein the heat-reactive resin is an acrylic copolymer including a monomer having a heat-reactive functional group as a monomer component.
4. The protective film transfer sheet for photo masks of claim 3, wherein the monomer having a heat-reactive functional group is a monomer having a hydroxy group.
5. The protective film transfer sheet for photo masks of claim 4, wherein the monomer having a heat-reactive functional group is an N-methylol acrylamide monomer.
6. The protective film transfer sheet for photo masks of claim 2, wherein the ionizing radiation curable resin consists of a paint obtained by mixing one or more kinds of photopolymerizable prepolymers or photopolymerizable monomers which can be crosslinked and cured by exposure

to ionizing radiation, and at least one kind of the photopolymerizable prepolymers or photopolymerizable monomers has a hydroxy group.

7. The protective film transfer sheet for photo masks of claim 2, wherein the mixing ratio of the ionizing radiation curable resin and the heat-reactive resin is 50-200 weight parts of the heat-reactive resin with regard to 100 weight parts of the ionizing radiation curable resin.

8. The protective film transfer sheet for photo masks of claim 1, wherein the thickness of the protective film is in the range of 1-20  $\mu$ m.

9. The protective film transfer sheet for photo masks of claim 8, wherein the thickness of the protective layer and adhesive layer is in the range 0.5-15  $\mu$ m respectively.

10. A method for transferring a protective film on a photo mask using the protective film transfer sheet for photo masks of any one of claims 1-9 comprises the steps of:

(1) adhering the adhesive layer of the protective film transfer sheet for photo masks on the image surface of a photo mask,

(2) imparting heat to the adhesive layer,

(3) exposing the adhesive layer to ionizing radiation, and

(4) peeling off the support from the adhesive film.

11. The method for transferring a protective film of claim 10, wherein the steps (1) and (2) are performed simultaneously and thereafter the steps (3) and (4) are performed in this order.